

Micro-electronics and employment

European File

Checking a bank balance or drawing out money at a street-corner bank terminal, consulting your TV set at home for train times or for the day's local entertainments, computerizing the home from household appliances to room temperature, automating repetitive industrial jobs, programming the safe driving distance between cars, making life easier for handicapped people through special equipment — all these are no longer just a futurologist's dream. The influence of micro-processors and mini-computers is progressively spreading into many areas of activity.

The industrial changes which will result from this new technology are, to a great extent, still difficult to foresee. The social upheaval to come is also difficult to predict. Whether the new technology brings with it economic growth or social crisis will depend on public authorities, on companies and on trade unions. The future could bring new jobs, a better division of labour and more harmonious industrial relations or, conversely, fewer jobs and social aggravation.

The question of jobs

Technological change always causes difficulties and the introduction of micro-electronics poses a triple problem:

- it will mean the end of certain traditional occupations, but will, by contrast, create new jobs for certain other skills. By encouraging a better use of material and human resources as well as reducing costs, it will stimulate an increase in supply and demand which could help increase productivity and eliminate the need to cut back on jobs.

- it will cause profound changes in the structure of employment given the changes in certain traditional products and services, but it will also create new products and services which will replace or complement others.
- it will demand great rapidity in innovation and development, given the degree of competition from third countries, and it is competition which is one of the determining factors in the expansion of the economy and of the job market. If we do not innovate as fast as other countries, we will be obliged to increase imports, thereby creating jobs in those countries to the detriment of our own.

Despite the extensive research already undertaken, the scope and quantity of changes in the job market that will result from the new technology is as yet still unclear. Sectoral analyses point to the following scenario:

- new products: in industry the manufacture of electronic components will be most directly affected. A large number of components have already been replaced by integrated circuits which require less labour to produce and which can often be assembled by automated systems. In 1978, this sector employed around 7.5% of the European industrial labour force (2 850 000 workers, 40% of whom were women). Changes in the structure of employment are inevitable; it will be less unpleasant if this sector learns how to adapt to the new requirements. Some examples are very significant:
 - electronic watches: the arrival of these 'new products' has precipitated the closure of watch factories which were not prepared or not capable of adapting, and has led to a sharp drop in jobs for people with traditional skills (-40% in the Federal Republic of Germany in 1975, for example).
 - calculators: the arrival at the beginning of the 1970s of cheap portable units caused the decline of firms which had not integrated this innovation into their production, but benefited the new companies which had geared themselves to handle these products. At the world level, the drop in the size of the labour force employed by the former was almost compensated for by jobs in new companies. The new jobs, however, were mostly created outside of Europe by non-European companies.
 - electronic cash registers: the production of these requires only a small labour force (about 25% of that required for traditional machines). The use of these new registers combined with electronic stock-control systems has already reduced labour demand in retail shops.
 - telecommunications: electronic telephone communication has led to a significant reduction in assembly work and in the labour force required. Certain telecommunication services will also see considerable reductions in personnel requirements. The telecopier can in many cases be used in place of the traditional postman. By contrast, the development of certain other services (e.g. sales and maintenance of new equipment) and certain markets (home consoles giving access to data banks, for example) should open up large possibilities for jobs. Overall, the outlook for this sector can be regarded as satisfactory.

- new processes: the automation of large areas of industrial production is becoming widespread. In certain sectors, petro-chemicals, for example, the need for human intervention has always been very limited. In other sectors, by contrast, the introduction of continuous processes constitute a serious threat to traditional manual activities. The following are three examples:
 - computer-controlled machine tools are not yet very widespread, but the expansion of their use, encouraged by their favourable cost-effectiveness, will cause traditional skills to be replaced by the computer. Will there be overall job stability? The experts are not sure.
 - the printing and publishing sector has also been affected by the introduction of new technologies, such as direct composition of text via a typewriter keyboard. Many jobs are at risk.
 - the automotive industry is affected by a twofold change. On the one hand, the automation of certain operations (welding, moulding, etc.) improves productivity by 30% to 80% but also eliminates numerous jobs. On the other hand, European car manufacturers' delay in utilizing electronics for lighting and control systems could favour their foreign competitors to the detriment of European jobs. This makes a research cooperation agreement just concluded between the major European car manufacturers particularly noteworthy.
- services: this sector, with its high level of employment and low productivity, will undergo profound changes. The following two examples show the importance of such change:
 - the organization of offices and administration: standardization, automation, electronic data processing, use of word-processing machines, replacement of traditional communications and filing systems, are just some of the applications of micro-electronics which will raise productivity by 2.2% to 3.5% per year over the decade. The elimination of certain unqualified functions will reduce the number of jobs and could, according to some estimates, affect 20% to 25% of the current 15 million offices jobs in the Community.
 - banks, financial organizations and insurance companies already make considerable use of the products of the new technology: automatic distribution of bank notes, computerized bank accounts, electronic inter-bank transfers, etc. A large proportion of bank jobs could still be automated: archives, direct link between point of sale and the central banking system, etc. However, the introduction of new technologies has coincided with a growth in the number of jobs in this sector which in 1978 provided employment for 4.8 million people in the Community (46% of which were women). The new technologies encourage the development and the diversification of financial services, even though forecasts of the overall impact on jobs are rather optimistic.

These sectoral estimates well illustrate the profound and often alarming change which is taking place in certain industries and services. They should, however, be considered with caution, since their sources (industry, trade unions or governments) are not completely neutral.

The 'indicative' estimates recently published in several countries should also be carefully considered. Drawn up to stress the importance of the social upheaval caused by the introduction of new technologies, they are often based on approximative data and on projections of current trends. The result is often an alarmist view of the future: 6 million office workers in France to be made redundant, a 20% level of under-employment in the UK by 1990, a drop in the overall labour force in manufacturing industry to 2% of its present level in the United States by the year 2000.

The 'aggregated' estimates obtained through detailed studies of a large number of industrial sectors, are regarded as more rigorous. According to the most pessimistic of these studies, 60% of occupational categories will be affected in some way by the new technologies and labour transfers will affect 10% to 30%. The German government puts the total number of jobs likely to be affected over the long term at 50%, the OECD (Organization for Economic Cooperation and Development) puts it at 35%. But how many of these jobs will actually be lost? On this question, the principal research findings have little to contribute. It is evidently too soon to formulate an overall forecast of the global consequences of the use of micro-processors.

A European challenge, a European response

The introduction of micro-electronics in our societies is unavoidable. European industry has not yet attained its potential position, either in the world market or even in its own market, where it has only a 10% share, whilst other countries, such as the USA and Japan, are making considerable efforts to strengthen their own position. This situation is dangerous. Its continuance implies for Europe the definitive loss of a chance to gain a future market, the reduction in its competitive capacity both at home and in the world, an increase in its technological, economic and therefore political dependence, as well as numerous job losses without the possibility of new outlets — with all the social and human consequences which this implies.

There is reason to hope, however:

- European industry is in a position to respond to this challenge and to win by 1990 one-third of the world market. To achieve such an objective, it has several cards up its sleeve: a Community market larger than the American market in which technical barriers to trade are progressively being eliminated to make trade more fluid, a large volume of public orders which should soon be open to companies from nine and shortly ten Member States, and national development programmes, whose effectiveness will be increased through better cooperation.
- to make best use of these trump cards, the European Commission has drawn up a Community strategy which was detailed in a report to the European Council on 29 November 1979. It is essentially a question of mobilizing and coordinating the efforts of Community Members States in order to create a homogeneous market, of encouraging cooperation between industry and users, of promoting European industry to ensure its competitiveness in world markets and to give it the means to master the new technologies, particularly, micro-informatics.¹

¹ See for further details *European File* N° 3/80: 'Europe and the new information technology'.

The implementation of this common industrial strategy implies that Community action should also be taken in the social field. The changes resulting from the new technology must be related to political and social objectives if we wish to make the best use of the chances they create, and minimize the related risks (no less evident) which have a particular bearing on jobs. Serious difficulties at this level will hinder the impact of the new technologies and compromise both Europe's industrial strategy and its social image.

A social strategy for the Community

The European Commission has therefore come out in support of:

- a strengthening of the dialogue between the social partners at the company level;
- the promotion, with governmental support and in cooperation with the social partners, of a climate favourable to innovation;
- the pooling at the European level, of studies, research and analyses to make the results available to all interested parties;
- development within a Community framework of economic and social guidelines to respond to the new needs.

In the light of these basic principles, the Commission considers it necessary to undertake action in the following areas:

- maintaining and developing demand: it is necessary to stimulate and to direct economic policy towards more rapid growth, accompanied by a more vigorous battle against our current ills (inflation, balance-of-payments deficits, energy imbalances). The objectives are: to improve the competitiveness of the Community, to facilitate a preventive restructuring of the sectors and regions affected, to provide the resources needed for vocational retraining and to develop those sectors (micro-processors, new services, small and medium-size companies, etc.) which offer the best opportunities to create jobs.
- raising productivity and reorganizing working hours: the increases in productivity offered by the new technology can help bring about the annual reduction of working hours and overtime. In addition, the greater operating flexibility it offers will also translate into greater flexibility in working hours, and particularly in the expansion of part-time jobs. It is clear, however, that the variable competitiveness in the sectors concerned implies different measures.
- modifying working conditions: these will be profoundly affected by the new processes. A certain number of precautions must be taken: the reduction of physical fatigue should not lead to an increase in nervous fatigue, the risks of status loss and of alienation in a more impersonal production process must be counter-balanced by the enlargement and enrichment of task to be performed. Decentralization of work, which

is both possible and in many ways desirable, as well as the extension of working at home, should not give rise to new forms of social discrimination.

- improving the quality of life: the new technology should not only favour the development of the economy and of leisure. It should also enable society to better fulfil its obligations towards the sick, the aged and the handicapped by providing suitably adapted goods and services, better distribution of income, etc.
- reorientation of vocational training: with the production process becoming less tangible, vocational training must compensate. It is not simply a question of training or retraining workers for new skills. The adaptability of all workers must be expanded. The new relationship between man and machine demands changes at all levels, from basic education to the retraining of engineers and scientists, not to mention the vocational retraining of the unemployed and the strengthening of links between education, vocational training and work ('in-service' training, etc.).
- redirecting job placement activities and vocational guidance: the flexibility and availability of the services involved must be increased to cope with critical situations, and also to permit these services to anticipate these situations and reinforce their links with industry, schools and vocational training centres. The essential objective is to reduce the frequent imbalance between the skills of workers available and those demanded by industry.
- social protection and assistance: the current job protection and income guarantee, as well as the rules governing redundancies, must be reviewed, particularly to facilitate access to 'in-service' training and to respond to the problems of those workers who are difficult to retrain (aged people, etc.).
- continuous analysis of changes in the structure of employment and of investment programmes: the mechanisms associating public authorities and social partners must be introduced to identify rapidly – at the national and Community levels – the 'problem' areas and to prepare for effective action.
- information: better information to the public at large and to interested parties (workers, youth groups, etc.) could help develop a climate favourable to socially desirable innovation.
- concertation between the social partners: foreseeable changes in the balance and distribution of industrial and social power, as well as the change in the lives of numerous workers make it imperative that trade unions have access to all information and are consulted at the company and regional levels, whether there are job losses or not. In certain cases, the changes in employment could be discussed and adopted in conventional ways through joint committees representing workers and employers.

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These guidelines have already been discussed in the Community's Standing Employment Committee which brings together representatives from the European Commission and Member States as well as employer and labour organizations. At the European level, too, concentration is indispensable if we wish to face, not only the industrial, but also the social challenge which is implicit in technological change on this scale. And this is certainly the case with micro-electronics ■

Corrections (and apologies)

- European File No 3/80: *'Europe and the new information technology': the third line from the end of page 4 should read: 'This should not develop into arbitrary discrimination'*.
- European File No 13-14/80: *'True or false? Questions about the European Community': page 3, on 12th and 14th lines, about Community budget, please read: '14 billion EUA' and 'about fifty EUA for each European citizen'*.

The contents of this publication do not necessarily reflect the official views of the Institutions of the Community.

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